

WHAT IS CLAIMED IS:

1. A drive system for imparting motion to a treating implement having a head
with a movable treating instrument comprising a motor, said motor having a
rotatable motor shaft, a cam rotatably driven around an axis of rotation by said
5 motor shaft, said cam having an outer surface with a closed loop cam track
eccentric to said axis of rotation, a treating implement head remote from said
cam, a control member disposed between said cam and said treating implement
head, said control member having a control slot extending completely
therethrough, a pivot member located between said control member and said
10 treating implement head, said pivot member having a through hole, said
treating implement head having a drive connection mounted to said treating
instrument and disposed toward said pivot member, a drive shaft having a drive
end and a driven end, said drive end being freely mounted in said cam track,
said drive shaft extending through said control slot and through said hole in
15 said pivot member, said driven end being operatively mounted to said drive
connection of said implement head to cause said implement elements to move
in response to movement of said shaft, said drive shaft being disposed along an
axis which differs from and is at an angle to said cam axis of rotation, said
control slot controlling the path of movement of said drive shaft whereby
20 rotation of said cam causes said drive end to move in said cam track in
response to the location of said drive shaft in said control slot with said drive
shaft pivotally moving through said pivot member as said drive end travels in
said cam track while said drive shaft slidably moves in said control slot to
transmit the pivotal movement of said drive shaft to said drive end and to said
25 drive connection for moving at least a portion of said treating head.

2. The drive system of claim 1 wherein said control slot is of straight linear shape to cause said drive shaft to move planarly.
3. The drive system of claim 2 wherein said cam track is circular.
4. The drive system of claim 2 wherein said cam track is non-circular.
5. The drive system of claim 4 wherein said cam track is oval.
6. The drive system of claim 2 wherein said control slot extends radially from said axis of rotation.
7. The drive system of claim 1 wherein said control slot is of non-straight linear shape.
8. The drive system of claim 7 wherein said control slot is of arcuate shape.
9. The drive system of claim 1 wherein said cam track does not extend beyond said axis of rotation.
10. The drive system of claim 1 wherein said drive connection includes a slot in a portion of said treating implement head, and said driven end of said drive shaft terminates in a ball mounted in said implement head slot.
11. The drive system of claim 1 wherein said drive shaft extends through a flexible bearing in said through hole of said pivot member.
12. The drive system of claim 1 wherein said treating implement is a toothbrush, said head being a cleaning head having an outer surface, said treating elements being cleaning elements extending outwardly from said outer surface and located on at least a portion of said head, and said drive connection being a slot in said portion of said head.
13. The drive system of claim 12 wherein said control slot is of straight linear shape parallel to said outer surface of said head.
14. The drive system of claim 13 wherein said cam track is circular.

15. The drive system of claim 14 wherein said pivot member is a thin plate, and said control member is a thin disk.

16. The drive system of claim 15 wherein said control slot extends radially from said axis of rotation, and said cam track does not extend beyond said axis of rotation.

17. The drive system of claim 16 wherein said portion of said head is oscillated back and forth over a range no greater than 30° .

18. The drive system of claim 12 is of straight linear shape at an angle which is non-parallel to said outer surface of said head.